

AMENDMENTS TO THE SPECIFICATION

Please replace the paragraph on page 2, line 33 to page 3, line 10 with the following paragraph, marked-up to show changes made.

The present invention is explained below primarily against the background of luminescence excitation and detection as an example of a widespread detection method in (bio)chemical analysis ~~and~~ as an important field of application of the invention. However, the invention can be applied directly to further optical techniques such as, for example, "second harmonic generation" (where radiating in an excitation light having a specific wavelength leads to the emission of a response light having half the wavelength with respect to the wavelength of the excitation light radiated in) and the fields of application thereof and also to further techniques of wholly or partly non-optical character which relate to the detection of signals which follow the intensity of a power-modulated stimulating excitation signal in a nonlinear manner.

Please replace the paragraph on page 29, line 24 to page 30, line 5 with the following paragraph, marked-up to show changes made.

A suitable optical system for generating signals that are correlated nonlinearly with the excitation light, as part of an analytical system according to the invention, is illustrated in figure 2. What is used as an excitation light source (f) is a pulsed titanium-sapphire laser with emission at approximately 800 nm (pulse length: 100 fsec., repetition rate: 80 MHz, average power used: up to 1.5 W, spectral pulse width: 8 nm, Tsunami model 3960, Spectra Physics, Mt. View, CA, USA). After the light has passed through a beam shaping optic (g), the intensity of the excitation light emitted by the laser can be regulated by means of an acousto-optical modulator (h) (fused silica crystal, 60 MHz carrier frequency, ASM-601-23, IntraAction, Bellwood, IL, USA) continuously between 0% and 80% of the output power. In this case, an aperture (i) serves to mask out the zeroth order of the transmitted light downstream of the acousto-optical modulator. As an alternative, with the aid of a rotating half-wave plate (j) for 800 nm and a polarizer (k), it is possible to regulate the intensity of the excitation light between 0% and 100% of the output power. Both intensity regulations can be controlled by means of a computer (q).